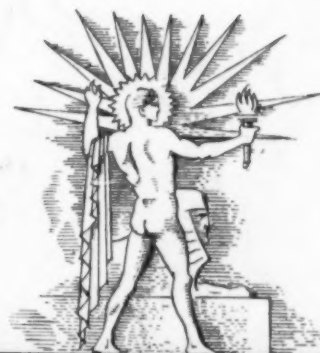


SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE.



October 8, 1938

Still Life

See Page 233

A SCIENCE SERVICE PUBLICATION

Do You Know?

The United States uses over half the world's silk supply.

Some kinds of brick if unpainted may absorb 10 to 30 per cent. of their weight in water.

There are six separate "forests" of fossilized wood in the Petrified Forest National Monument.

Some one has figured that a falling meteorite will strike some one in America about once in 9,300 years.

With assistance of a rubber company in Michigan, a sculptor has succeeded in making sponge rubber hands for the maimed.

The south side of a building in the latitude of New York gets four and a half times as much sunlight in a year as the north side does.

It is believed that ancient and medieval people did not have whooping cough among their diseases; no description of it prior to 1578 is known.

The Chinese excelled in carving jade back in the Shang period, which dates from 1400 to 1100 B. C., and was the earliest historic period of China.

Aided by high water, an ocean-going ship recently passed through the Bonneville Dam locks and reached a point on the Columbia River 200 miles from the sea.

QUESTIONS DISCUSSED IN THIS ISSUE

Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

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BIOLOGY

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GENERAL SCIENCE—PSYCHOLOGY

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Why is Hitler said to be "infantile"? p. 227.

Why is war a form of suicide? p. 231.

PSYCHOLOGY

Can apes distinguish colors? p. 232.

How can you recognize propaganda? p. 234.

PUBLIC HEALTH

How did scientists plan to protect civilians from air raids? p. 233.

How might the threat of air raids promote public health? p. 235.

Why are the young people of Germany unfit for long marches? p. 239.

Few migrating birds fly higher than 3,000 feet.

Trees struck by lightning sometimes explode.

Cud chewing must have been a life saver for some of the less aggressive animals in their wild state, because they could snatch a meal at a grazing spot and then chew it at leisure in a safer place.

The American red fox is a smaller animal than the fox hunted in England.

Henry VIII at one time closed all the hospitals of England, in order to stamp out abuses in those institutions.

Modern paints are still manufactured on the basis of formulas worked out by Leonardo da Vinci and his successors who found Renaissance paint unsatisfactory.

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PSYCHIATRY

Hitler's Personality Called Paranoid, Infantile, Sadistic

His Weeping Fits and Attacks of Melancholy Point To Neurotic Personality, Struggle Against Effeminacy

AMERICAN psychiatrists, asked by Science Service to diagnose Hitler's personality, pronounce him "paranoid," "infantile," "sadistic," and "self-destructive."

The man who threatened to plunge Europe into war has qualities that would cause him under ordinary circumstances to be committed to an institution or disregarded as a crank.

Dr. Karl A. Menninger, chief of staff of the Menninger Clinic, Topeka, Kans., author of "Man Against Himself," replied to Science Service's telegraphic inquiry as follows:

"For many years psychiatrists have recognized the existence of a form of mental disease characterized by enormous ambitiousness, ideas of grandeur, absurd theories of origin or mission, unshakable convictions that other people are the aggressors, the persecutors, often combined with considerable ability to inspire others to believe these things, however fantastic, however dangerous.

"Under ordinary circumstances, such individuals are committed to institutions or disregarded as cranks. Given a sufficiently inflammable society, they may become religious or military leaders. Their egotism, ruthlessness, cruelty, misrepresentation and unscrupulousness are all justified in their own minds and in the minds of their followers for whom the laws of reality no longer have any validity.

Self-Destructive

"In the long run, of course, this is self-destructive, but in the meantime society may be the victim of fanatical destructiveness. Whether or not this applies to the man who has designated himself 'the leader' and who screams and shouts his fervent adjurations and accusations to his excited followers, I leave to your judgment.

"It would be unscientific to make a diagnosis without seeing the patient. But there is no reason why the sane portions of the earth's population should not recognize these symptoms and take steps to protect themselves."

Dr. Oscar J. Raeder, Associate Pro-

fessor of psychiatry, Boston University School of Medicine, responded with the following opinion:

Infantile

"Hitler is an infantile personality. His temper tantrums, his weeping and similar emotional manifestations under stress are childhood fixations. He is amoral and probably sadistic. His immature judgment accounts for his harebrained exploits, which have so far been rather successful like the first petty larcenies of the untrained child. Her warnings unheeded, mother world's patience has been sorely taxed, and she now appears to be driven to use the birch."

To Dr. A. A. Brill, eminent psycho-

analyst of New York City, "Hitler is a psychopathic paranoid personality whose sole need is hatred. All his actions are dominated by this sadistic leitmotif. His hatred for Jews and his love for Germans are mere excuses for his algolagnia, that is, for his pleasure in pain. But such lust for destruction always carries with it self-destruction."

A "Sissy"

That Hitler is also a "sissy" behind his aggressive appearance was indicated by Dr. Harold D. Lasswell, professor of Political Science at the University of Chicago and the William A. White Psychiatric Foundation, Washington, D. C. Dr. Lasswell is author of "Psychopathology and Politics."

"Hitler's own nature demands periodic crises," he said. "We know from the testimony of men who have worked with him that Hitler suffers from frequent attacks of melancholy and gives way to weeping fits. These neurotic symptoms appear in personalities who must struggle against impulses toward passivity and effeminacy. After Hitler gives in to these weaknesses, he is driven to preserve his self-respect by daring and



LIFE ON THE HEIGHTS

These Rocky Mountain pipits are found only in the highest life zone of the Western Mountains; they love the Alpine meadows where the earth is rich with flowers for a short summer. The group shown here is part of a great panoramic exhibit recently installed at the Colorado Museum of Natural History by Curator Robert J. Niedrach and George P. Young, against a forty-foot panorama painting of Long's Peak by C. Waldo Love. The exhibit includes more than 8,000 reproductions of flowers in celluloid and wax, by WPA workers.

spectacular displays. These dashes into action smother his shame at feeling weak, inferior and inadequate.

"Some neurotic types, aware of their self-distrust, are often astute judges of the weaknesses of others. Hitler knows that his enemies—especially the ruling groups of France and Great Britain—are weak because they are afraid to crush him. Hitler knows that they fear a communist Germany rising from the ashes of a defeated Germany more than a Nazi Germany."

Dr. Gregory Zilboorg, New York psychiatrist and director of research of the Committee for the Study of Suicide, provides the explanation of Hitler's difficulty in diplomatic negotiations. He replied:

"Hitler is a phenomenon, apparently a compulsive neurotic character; hence his intense sadistic outbursts.

"His frequent pseudo-pious references to God and his hysterical outbursts of dramatic sorrow for the suffering of his German racial brethren are characteristic of compulsion neurotics who weep while murdering and murder while weeping. In other words his masochistic (pain-loving) inner conflict as an individual is fully reflected in his public life as leader of the German Reich.

"Hitler's psychological inability to negotiate or to make a compromise is what distinguishes him as a deeply neurotic person laboring under the pressure of a murderous impulse which is naturally associated with self-defeating suicidal drives. Because he, unlike Napoleon, is deeply neurotic, his self-defeatist drive came out more prominently and sooner than it appeared in the career of Napoleon. It is not that he identifies himself with the German race; he tries to inflame the race to identify itself with him.

March to Self Defeat

It is significant that he called Vienna the incestuous city. He apparently struggles inwardly against his own incestuous drives which he expresses in the form of homicidal domineering drives. Hitler struggles against his own passivity by beholding a mass psychotic passivity of his herdlike following.

"His present adventure may very well prove to be the culminating point in his dramatic march to self-defeat."

In Science Service's request for diagnoses of Hitler's personality, it was recognized that diagnosis without seeing the patient is difficult. But in Hitler's case, speeches, writings and behavior are well reported. Due to the influence of Hit-

ler's personality upon the world situation at the present time, it was considered advisable to call leading psychiatrists in-

to this public consultation in order that their opinions might be made known.

Science News Letter, October 8, 1938

METEOROLOGY

Slow-Moving "High" Turned Hurricane on New England

Hurricane, Which Ordinarily Would Have Spent Itself At Sea, Turned North and West By the Obstruction

NEW ENGLAND, digging itself out from under hurricane debris, may take what consolation it can from the fact that the storm was the worst disturbance of tropical origin that ever struck its shores—was a high-power sea-blast even by Caribbean standards. Other hurricanes have visited the Northeastern seaboard in past years but never anything like this one.

A lazy high-pressure area, moving too slowly off to sea, was the indirect cause of New England's woes. Ordinarily, when a tropical storm center moving northward fails to make land below the Virginia Capes, it will veer off to the northeast and blow itself out at sea. But this one found itself stymied behind

that loitering "high," like an impatient motorist behind a slow truck, and was forced to move straight northward and then even towards the northwest.

The storm center traveled at a motor-car speed. Usually, hurricane centers travel at a rather leisurely gait, despite the high velocity of the winds that blow inward towards them. But the center of this storm averaged a northward speed of 53 miles an hour from off Cape Hatteras until it was over Long Island. Probably during part of that time it was moving as fast as 60 miles an hour.

Despite the terrible record of death and destruction left by this storm, the present hurricane season has been a relatively light one. Thus far, there have



WRECKAGE

These remains of a home were photographed at Montauk, a small picturesque village at the northern tip of Long Island, by the American Red Cross, which is giving aid to 15,000 families in the hurricane area.



AFTER THE BIG WIND

Heavy loss was suffered by summer residents and fisher folk in the path of the tropical hurricane which departed from usual paths to hit Long Island and New England. An official photograph of the American Red Cross.

been only four hurricanes detected in Caribbean and Gulf waters, and only two of these have been really severe—the one of Sept. 21, and one a few weeks back that struck the Mexican coast near Tampico and did not figure much in American news, although it did a great deal of damage to Mexican shipping and shore works.

The greatest hurricane season of all Weather Bureau history was that of 1933: with a total count of 21.

New England farmers face a winter of shortage and hardship as a conse-

quence of the hurricane, a survey by the U. S. Weather Bureau disclosed.

Laconically, it tells of disaster: "New England: All states, except Maine, ravaged by hurricane which ruined crops; little left for harvest. Greatly excessive rains in Connecticut and Merrimac valleys, and tributaries and streams in north-west Vermont seriously flooded towns, eroded farm lands, and washed out rails and highways. Potato digging in Aroostook County delayed; too wet."

Science News Letter, October 8, 1938

FORESTRY

Grave Forest Fire Menace Faces New England

Hurricane Tore Down Several Billion Feet of Timber Which Now Is Piled Ready to Catch Fire or Pests

FORESTRY scientists are mobilizing government aid in an attack on the gravest forest fire menace in New England history.

Several billion board feet of timber were downed in New England by the recent hurricane, and today are piled like jackstraws into a giant tinderbox. Now October dry winds are at hand to usher

in the usual autumn forest fire season.

The Connecticut valley may get its first taste of the dangerous "crown fires" of the great western timberlands, unless immediate steps are taken to clear the fallen trees, declares Ward Shepard, director of the Harvard Forest.

Mr. Shepard has been appointed chairman of an emergency state forest fire

committee, created to coordinate federal, state, and city agencies.

Further danger threatens in an invasion of insect pests, infesting the dead trees, and later spreading to those still standing. This can be expected unless the fallen timber is cared for, Mr. Shepard said.

A principal purpose of the committee will be to help devise means of salvaging as much of the timber as possible for lumber. The total timber loss has been roughly estimated to be \$40,000,000. A major economic problem will be to help owners store the lumber and slowly dispose of it without flooding the market.

Typical losses were suffered by the Harvard University experimental forest of 2,100 acres, located at Petersham, Mass., near the central path of the hurricane. Out of a stand of about 10,000,000 board feet, half was blown down.

About 1,500 trees were downed at the Harvard Arnold Arboretum, near Boston, which contains thousands of trees and shrubs representing altogether about 7,000 different species suited to the New England climate, and gathered from all parts of the world. Because of extensive duplication, however, very few species were lost.

Science News Letter, October 8, 1938

GENERAL SCIENCE

War Research Saps World's Inquiring Brain Power

POTENTIAL war absorbs too much of the world's inquiring brain power to please those who desire more expenditures for making the world a better place in which to live. A recent estimate is that of all the money spent in research in the United States and Great Britain, one-fourth goes for military research. The percentage must be even larger in a nation like Germany.

Half of the research money is credited to industrial research and related pure research in physics and chemistry. Even some of this is a military expenditure in the last analysis. Most of the remaining fourth is devoted to agriculture and its supporting sciences. Social and humanistic sciences receive "such an infinitesimal part of the total as to be scarcely discernible!"

In Great Britain where an articulate group of scientists deplore and expose the "frustration of science," government estimates for 1938-9 show the ratio of 5 to 1 in favor of research funds for military purposes. Admiralty and air ministry research grants total \$22,900,-

000 compared with \$4,500,000 for the Department of Industrial and Scientific Research and the Medical Research Council. And some of the industrial and scientific research expenditures are as much for military as for industrial purposes, such as those for aircraft design.

With photographs of destroyed Spanish universities to drive home the point, the science frustration exhibit comments that scientific research to improve warfare is a strange and indirect sort of suicide for the scientist.

In military research the internationalism of the scientist disappears and this contributes markedly to inefficiency. Not only is there no free interchange of information across national borders, but a British commentator says "it is found necessary to segregate the worker from the rest of his scientific colleagues by forbidding mention of his work outside his laboratory."

Science News Letter, October 8, 1938

PHYSICS

Corrosion Wastes Exceed World's Wartime Budgets

THE war-basis budgets of the nations of the world reach staggeringly large figures but the most costly single item which the United States, or any other nation, faces is the cost of corrosion and its prevention.

This is the estimate of C. E. Heussner, materials engineer of the Chrysler Corporation, who computes the world cost of the corrosion damage of metals alone at some \$5,000,000,000 each year.

Each year a quarter of all the iron in the world returns to oxides or ores from which it came, Mr. Heussner states in an American Society for Testing Materials summary.

Much of the iron thus corroded is lost permanently, for while it is theoretically possible to send the iron oxide back to a plant and convert it into commercially pure iron again, the iron rust is so scattered that it is economically useless to collect it and start over again. It is only economical to try and collect the unrusted parts of scrap metals. Hence the place of the junkman in modern society.

Speaking rather loosely, we talk of rust-proof metals and corrosion-resistant materials but in actual fact all metals and protecting surfaces fall down in special cases and what is good for one job is useless in another. Everything depends on a metal's environment, the conditions under which it will be used in service.

Ordinary steel, as one example, needs

plenty of protection. It rusts in moist air and dilute nitric acid. But if steel is immersed in concentrated nitric acid—a potent solvent—it will not dissolve. The steel becomes passive and acts like a

noble metal. In this environment steel is a noble metal, H. W. Gillett of the Ohio State University's Battelle Memorial Institute, observes in another part of the report on corrosion.

Science News Letter, October 8, 1938

GEOLOGY

Cession of Silesia to Poland Involves Famous Teschen Coal

Also Included in Czech Portion of Silesia Are Important Railway and Industrial Establishments

POLAND's nationalists, who added to the sound and fury over Czechoslovakia by their demands for the cession to Poland of Czech Silesia, will get more than just another 80,000 Poles if they have their way.

They will add to the already extensive high-grade bituminous coal deposits of Polish Silesia the famous coking coal of the Czech Teschen district itself. They will become also the possessors of the Czech half of the iron ore veins that cross the frontier just to the west of Teschen.

The border runs through the city of Teschen, 18,000 persons inhabiting the western portion of the town allotted to the Czechoslovak government. The ancient duchy of Teschen straddles the boundary determined in 1920 by the Council of Ambassadors set up in the general settlement following the World War.

The famous Teschen coking coal is a vital necessity to both Czech and Polish industry. A large part of the coke has been exported to Poland since the two governments were established. Formerly the industrial district which depends on Teschen coke was entirely within the Austro-Hungarian monarchy.

Also included in the Czech portion of Silesia is the strategic Oderberg-Jablunkov railway, which might go to the Poles in a new settlement.

The district is heavily industrialized and its transfer to Poland will add significantly to the Polish industrial plant. Poland is still predominantly agricultural, though industry has made rapid strides since the World War.

Glass, bentwood furniture, leather, steel, machine belting, flax, hemp, textiles and pottery are some of the products turned out in this busy district. No exact figures indicating the value of these products were immediately avail-

able in Washington, however, for figures on Czech industry and trade customarily cover only the entire country without differentiating among the different districts.

"We were always accustomed to dealing with our country as a whole," a secretary at the Czechoslovak legation remarked sadly in response to an inquiry.

The major parts of Silesia were handed over to the German and Polish Republics in the post-war boundary marking spree, the Czechs retaining only a few thousand square miles of the province.

Science News Letter, October 8, 1938

METALLURGY

Manganese Produced From Low-Grade Ores

MANGANESE, highly important in the manufacture of alloy steels, can now be produced cheaply from low-grade ores by a new process developed by the U. S. Bureau of Mines. The process involves first roasting the ore, then chemically treating it to remove various impurities, and finally separating out the metallic manganese by electrolytic extraction.

The manganese thus obtained is 99.63 per cent. pure, Bureau of Mines metallurgists state. They have produced several hundred pounds of it for experimental purposes, and the Bureau has published a pamphlet in which the process is described in detail.

Manganese is exceedingly important in the iron and steel industry. Manganese steel, containing up to ten per cent. of manganese, is very hard without being brittle, and resists corrosion better than ordinary steel.

Compounds of manganese are also used in the glass, pottery, dyeing, paint, and chemical manufacturing industries.

Science News Letter, October 8, 1938

POPULATION

Proposed Transfer of Czechs Has No Precedent in History

A MOVEMENT of German and Czech peoples such as that which has been the subject of negotiations in the present crisis has no precedent in the whole history of populations, in the opinion of American population experts.

Possibly involving 500,000 to 1,500,000 people, such a transfer of people for political reasons has never before been done.

Nearest to it was the transfer between Turkey and Greece following the World War. But then there was no question of divided loyalty; it was merely a question of sending Greeks to Greece and Turks to Turkey.

The Sudeten area is occupied by Czechs and by Germans, who although speaking different languages and inheriting different traditions, all know this area as home and are tied to it by bonds of affection and financial interest.

These people are not driven out of the country by economic conditions as Americans were recently driven out of the dust-bowl area by intolerable drought. Their homes are in the Sudeten; their businesses are there. They have no place

to go. It would be the responsibility of those superintending the movement to provide somehow for them.

How to make such provisions for perhaps a million souls is a stupendous task. How to accomplish it in a matter of days is a greater problem.

Complicating the picture is the presence in the area of a large number of Jews. This number is larger than the figure shown by the census of nationalities. This is due to the fact that the German Jews are registered in the Czechoslovakia census as Germans; the Czech Jews as Czechs. Only with the aid of the religious census can this figure be determined.

It is only reasonable to assume that not all of the Germans now living in the area which it is proposed to transfer to Germany will want to live under the rule of Hitler. Similarly it might be that not all of the Czechs would want to take their cows and leave their homes in order to avoid the Hitler regime. How many would be included in either of these groups, or whether they would balance each other in numbers, cannot be estimated.

Science News Letter, October 8, 1938

PSYCHIATRY

War Viewed By Psychiatrists As Suicide Pact of Nations

WAR is a gigantic suicide pact. In it nations join in an insane mass movement for the destruction of each other and themselves. That is the diagnosis by psychiatrists and biologists of the ill that afflicts a warring world.

People marching into war are blindly driven by biological forces they do not understand. Like the infrahuman lemmings who are roused by overpopulation to join in a mass migration that carries them to self-destruction in the sea, humans, too, may be driven to annihilate themselves in war. That is the view of a biologist, Dr. Raymond Pearl, of the Johns Hopkins University.

War is a mental disease, a psychosis, in which whole peoples go mad, in the opinion of the 339 psychiatrist signers of a document which recently warned

all nations of their impending peril. This historic statement was subscribed to by an Italian army physician, by French, British, German and Austrian psychiatrists, as well as representatives of such habitually neutral nations as Holland, Belgium, Denmark and the United States.

"The suggestive force of speeches made by leading statesmen is enormous and may be dangerous," these experts declared. "The wartime spirit, so easily aroused by the cry that the country is in danger, is not to be bridled, as was evident in 1914."

"Peoples, as well as individuals, under the influence of suggestions like these may be neurotic. They may be carried away by hallucinations and delusions, thus involving themselves in adventures

perilous to their own and other nations' safety."

No one can measure the psychological consequences of unbridling the forces of hate in man, it was emphasized by Dr. William Alanson White, pioneer in psychiatry who, as Superintendent of St. Elizabeth's Hospital, Washington, D. C., nursed sick minds for many years prior to his recent death. Crime and insanity follow in the wake of war, he said.

"Nothing activates the aggressive instinct more seriously than does war," Dr. White dictated almost as a dying statement in 1937, just one month before he died.

"An orgy of killing lets it loose and it is a good many years before it is ever chained up again. We are having that experience, I am afraid, now."

Killed By Own Weapons

War is self-destruction, says Dr. Karl A. Menninger, chief of staff of the Menninger Clinic, Topeka, Kansas.

"It surely is no longer doubted by any thinking person that there is no such thing as victory in war, that the conqueror like the conquered suffers irreparable loss," he said in a recent book. "In this sense, war, contrary to appearances, is virtually self-destruction."

"It has been pointed out that in the World War, Germans were butchered with hand grenades fired by German-made fuses, that British battleships were sunk with British mines which had been sold to the Turks. In the battle of Jutland, the German sailors hurled their missiles against defensive armor-plate which had been manufactured in their own country, by the same company that manufactured the guns which they were firing."

"Throughout the war, men of all countries were slaughtered by weapons invented, developed, and distributed to the foe by their own countrymen."

"The shadow of a universal war looms before us, threatening to substitute for all petty individualistic and nationalistic self-destruction another convulsive effort at world suicide more violent even than that represented by the war of 1914 to 1918."

"The spectacle of such almost joyous preparation for mass suicide as is even now in progress cannot but fill the reflective observer with awe, and cost the stoutest heart some qualms."

Science News Letter, October 8, 1938

Flood control is a problem in dry Death Valley—when it does rain, there may be a cloudburst.

MEDICINE

Blood Transfusion Banks Are War Preparation

IF and when war breaks out in Europe, one of the new medical weapons at the front will be refrigerated blood for transfusions.

French physicians have a plan for collecting blood from civilian donors in every province. Blood from slightly wounded and convalescent soldiers also will be obtained.

According to the Paris correspondent of the *Journal of the American Medical Association* (Oct. 1), earlier plans for transporting blood to the front by airplanes and automobiles equipped with refrigerating apparatus have been supplanted.

The use of a specially constructed box to contain a large number of flasks of conserved blood which can be kept at a temperature near 4 degrees Centigrade, a little above freezing, is being considered. Such boxes can be transported by ordinary army trucks. The blood can then be warmed before transfusions.

Extensive studies have shown that refrigerated blood retains its therapeutic qualities for from 10 to 15 days. During the first week refrigerated blood resembles fresh blood so closely as to make it safe for use as a substitute.

In Spain twenty or more transfusion centers are now in operation, it is said, with non-mobilized civilians, especially women, as voluntary donors.

Science News Letter, October 8, 1938

GENERAL SCIENCE—PSYCHOLOGY

Advance of Knowledge Is Breaking Down Barriers

GRADUALLY the barriers between the sciences are being battered down by the advance of knowledge. The problem itself has become the important matter, not the viewpoint of the investigator.

In one laboratory, brainwaves, those electric impulses that are messages originating in the brain itself, are being studied cooperatively by psychologist, physiologist, physicist and electrical engineer.

Epilepsy, age-old medical enigma, is today being attacked by researchers using methods of the psychiatrist, the psychologist, the electrician, and even the slow-motion picture photographer. No attempt is being made to sort out the findings and relegate them to the several realms of medicine or mental phenomena.

In the study of mental disease, many

scientists have given up altogether the attempt to distinguish between the physical and the psychic. Such definitions are not only meaningless, but profitless, is the feeling.

At the Harvard Psychological Clinic, individuals are studied by psychologists, psychiatrists, physicists, criminologists, and others with the single objective of understanding that person's difficulties with a view to advising him.

Gradually, it is being realized that physical health and mental well-being are not just medical problems or psychological problems or economic problems or political problems or social problems, but human problems. They can be successfully attacked only by a team of researchers with varied backgrounds of training and perspective working in the closest of cooperation.

As the frontier of scientific discovery is pushed forward, boundary lines of all sorts become more and more artificial.

May it not be hoped that eventually political boundaries will assume as nominal a form as scholastic barriers are now taking on? M. Paul Elbel, French delegate, has told the League of Nations that one third of the amount now being spent on armaments would finance the cooperative research necessary to abolish our present intolerable incongruity of empty stomachs and full granaries.

Science News Letter, October 8, 1938

PSYCHOLOGY

Apes Work Vending Machine By Recognizing Colors

YALE's money-changing apes, famous for their ability to operate slot machines, have learned a new trick, reported by Dr. Meredith P. Crawford to the American Psychological Association.

Now they can operate food-vending machines when it is necessary to release colored holders in the order, yellow, green, red, and blue, regardless of their changing positions on the machine. Nor is that the limit of their increasing talents.

They have been taught to work in pairs, separated from each other by a grille, so that one partner had to watch the other and work his own holders in proper sequence with the manipulations of his fellow worker. When one partner hesitates, the other will urge him by gesture or by pushing him toward the proper device.

Dominant animals command, subordinate ones beg for the necessary help from their partners.

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IN SCIENCE

MEDICINE

Training For Emergencies Proposed For Physicians

WAR emergency training courses have been proposed for English physicians. The courses would prepare those doctors who have never treated patients, but instead worked in research laboratories, to handle injuries following air raids. Such cases may require more than first aid treatment and no practising physician may be available.

Model courses in treatment of compound fractures, severe wounds and burns, methods of giving the newer anesthetics and the technique of blood transfusion might be given by the British Postgraduate Medical School. This proposal is made by *The Lancet* (Sept. 17) in response to requests for such war preparation by medical men and women who have never engaged in practice.

Science News Letter, October 8, 1938

AERONAUTICS

France's New Flying Boats Will Be Sixty-Tonners

FRANCE's six new transatlantic flying boats, now in preliminary production, will weigh 60 tons, half again as much as the Boeing Clippers now nearing completion in Seattle for Pan-American Airways transoceanic services, it is reported.

Though they will gross that much, they will be designed to carry only 24 to 32 passengers across the "big pond," as compared with 50 overnight passengers the Atlantic type clippers can carry. Cruising speed is to be 200 miles an hour, while the range will be sufficiently great to permit a 1,000-mile margin over the New York-Azores stretch.

Three types are under construction, two each by three different companies—Latecoère, Potez and Liore—all well-known French aircraft manufacturers. One concern is using a flying scale model one-third actual size in the engineering job. The Glenn L. Martin Company of Baltimore, a noted American flying-boat building concern, used a flying scale model to aid in its construction activities, but it was much smaller.

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SCIENCE FIELDS

PUBLIC HEALTH

London Makes Plans For Air Raid Protection

SCIENTIFIC plans for the protection of the civilian population of London against air raids are being developed by a special committee, which includes such leading English men of science as Profs. J. B. S. Haldane, J. R. Marrack, and J. D. Bernal (*Nature*, Sept. 3).

Experience in Spain and China has shown, the committee points out, that civilian populations will not be passed over in favor of factories, rail centers, dockyards and other specifically "military" targets as was the case in the World War. In the "total war" of the future, civilians will come in for gas, explosives, machine-gun "strafing," and incendiary bombs.

Because of this, fullest possible protection or avoidance of air raids must be included in any satisfactory plan. Accordingly removal to the country of all children, as well as the aged and the sick, is the first thing called for. Hospitals are to be built in the country, and school camps established.

For the adult population, the plan calls for a series of tunnels, lined with steel, to be dug deep in the famous close-grained London clay, below the reach of even the heaviest high-explosive bombs, and provided with all essential facilities for semi-permanent occupation. Copies of the plan, in pamphlet form, are now being sold in London for threepence.

Science News Letter, October 8, 1938

BIOLOGY

Male Called Weaker Sex By Edinburgh Biologist

WEAKER sex! That wilting epithet, long bestowed by the lordly male upon his meek and submissive mate, now snaps back into his own face. And a male scientist is responsible, too: Prof. F. A. E. Crew of the University of Edinburgh.

"The male in man is inherently the weaker sex," declares Prof. Crew in the British weekly journal, *Nature*, "more prone on account of his relative consti-

tutional weakness to developmental anomalies, to congenital debility and to death from diseases of all kinds."

The Edinburgh biologist, in issuing this pronouncement, is indulging in no snap judgment. In his article he sets forth an array of facts most embarrassing to male notions of superiority—if any such still survive.

More boy babies than girls are born, as is fairly well known. British vital statistics show 105 male births to 100 female. But immediately the boys start dying off faster than the girls, until the ratio between the sexes in the 15-to-19 age bracket is evenly balanced. Thereafter there are more women than men, until in extreme old age, from 85 years on, there are twice as many surviving females as there are males.

Prof. Crew has sought hereditary causes for this state of affairs. He has three suggestions:

There may be lethal genes riding on the male sex chromosome. This chromosome is absent in women, so the lethals would also be lacking. However, Prof. Crew thinks this factor plays relatively little part.

Tendencies to certain defects may be carried by the genes of both sexes, but because of physiological differences they may be expressed only in males. Colorblindness, and the hemophilia or "bleeding" that afflicted the unfortunate older son of Alfonso XIII are examples.

Finally, physiological peculiarities connected with the primary or secondary sex glands may load the dice of death against males.

Prof. Crew specifies that while the weakness of the male is fact, his suggested explanations are only speculation and he calls for criticism and experimentation to test them.

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SOCIOLOGY

A. R. P., Butchers—Still Life

See Front Cover

SYMBOLIC is the scene in peaceful Cambridge, England, on this week's cover, snapped by a Science Service staff member during the recent British Association for the Advancement of Science meeting there. The butcher boy is still wheeling his peaceful errands (at this writing) and Aerial Raid Precautions seem to be less imminently needed.

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An airedale in Philadelphia is wearing an artificial leg made of aluminum.

OCEANOGRAPHY

California Submarine Canyon Rivals the Grand Canyon

RIVALING the Grand Canyon of Arizona in magnitude, a newly discovered submarine abyss cut into the ocean bottom off Carmel and Monterey, Calif., is described by Prof. F. P. Shepard of the University of Illinois, at present working at the Scripps Institution of Oceanography, University of California.

The subsea canyon is about 7,000 feet deep, and sections already traced have shown contours resembling those of the Grand Canyon of Arizona. Study now being conducted from the laboratory yacht E. W. Scripps includes soundings, dredging, and readings of the water temperatures.

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MEDICINE

New Morphine Compound May Be Addiction-Free Drug

A NEW pain-relieving drug which may be the means of freeing the world from the poppy's bondage has been developed at the University of California.

The drug, dinitrophenylmorphine, was first reported by Dr. Chauncey D. Leake, professor of pharmacology at the University, at the meeting of the British Pharmacological Society at Oxford University. Collaborating with Dr. Leake were Dr. George Emerson of the University of West Virginia and Benedict Abreu and N. M. Phatak, graduate students at the University of California.

The new drug, called DNPM for short, is a combination of morphine and dinitrophenol. The latter is a fever-producing drug which caused disastrous results and some deaths when used without proper supervision as a weight-reducing medicine. The new drug is said to have none of the action of dinitrophenol but to be much more like codeine and morphine.

Experiments on animals and normal human subjects show that it has pain-relieving properties and respiratory effects similar to morphine and greater than codeine. Animal experiments also suggest that it may be less habit-forming than morphine.

Dr. Leake and associates pointed out, however, that any chemical which relieves pain and causes a feeling of well-being may become habit-forming in persons desiring to escape from an unpleasant health environment.

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PSYCHOLOGY

Propaganda

An Insidious Assault Upon the Intelligence, Psychology Warns You How to Recognize It

By MARJORIE VAN de WATER

THEY cut off the hands of little children. Bombs were dropped on a group of playing orphans. Old ladies were beaten and tortured. No nation of integrity could stand by and permit such outrages. Massacre! Brutality! Insult!

You recognize these phrases. They are war propaganda.

The people of Germany hear them about the Bolsheviks or the Czechs. The people of England hear them about the Japanese. Over the Berlin radio you can hear of the massacre of Arabs in Palestine. Over the London airwaves you hear about mistreatment of Jews in the same place.

The United States in the coming months will be flooded with such propaganda. Some of it will be true; some will be false. All will be manipulated in the telling to produce the particular effect the propagandist desires.

Newspaper editors will spare you from great masses of such material. Literally tons of it will go into their capacious waste baskets.

More will find publication in partisan papers, in special organs, in new magazines started for this very purpose, over the less rigorously edited airwaves.

Your only weapon against the onslaught of this most modern and most effective of all the instruments of war is a knowledge of the rules by which the propagandist works. Psychologists have studied this art. They know how to use propaganda. They can also put you on your guard against it.

Dethrones Reason

Propaganda is an assault against intelligence. To succumb to it is to dethrone reason and set blinded emotion in its place.

For successful propaganda never appeals to the mind. It rouses the emotions. It takes advantage of all the prejudices, the hates and loves that are already in man's heart. And it directs these forces against the individuals, the nations, the parties, or the policies which the propagandist is undertaking to destroy.

Watch for these earmarks of propaganda:

1. Propaganda appeals to the emotions, not to the intelligence.

2. Propaganda offers slogans—high-sounding phrases. Deutschland ueber alles! Make the world safe for democracy! Defend these tortured creatures! Make the seas safe! Keep the home fires burning! Gott mit uns! Stop the march of the dictators! Crush the Communist Curse!

3. Propaganda often conceals its source. Printed matter without signature; vague group names or "Leagues" without headquarters; statements without their source other than loose "everybody says" or "it is well known";—these betray the propagandist.

4. Propaganda urges haste, for delay permits the reason to act.

5. Propaganda uses indirection, innuendo, insinuation and suggestion. Direct statements that can be disproved are avoided.

6. Propaganda takes advantage of the strong attachments already in men's hearts. Propaganda would make it appear that Church, Government, freedom, honor and family are being attacked and can only be defended by the course being urged.

Praises Peace

The war propagandist is loud in asserting that he wants only peace. Seldom indeed will he admit that he wants war.

Adroitly he suggests that we may be "forced into it." Or he intimates that a little fighting now will serve to "prevent war."

This little fighting is not called war. It is a "punitive expedition," "an incident," or perhaps a "protective expedition" or a "defense of tortured creatures."

The motive is never destruction. Bombs are dropped in order to "spread culture," to "make the world safe," or to "protect freedom."

Adolf Hitler, in his Nuremberg speech told of the gigantic fortifications now under construction in Germany.

"These most gigantic efforts of all time," he is quoted as saying, "have

been made at my request in the interest of peace."

The war propagandist extols certain virtues—bravery, honor, protection of the weak, self-respect, sympathy, humanity, patriotism—and skillfully he insinuates the implication that only in the soldier are such virtues found.

The war propagandist denounces certain evils—conspiracy, plotting, oppression, encroachment of rights, force, violence, torture, terrorism, injustice—and the attempt is made to associate these evils with the "enemy."

The evils listed here were selected from Hitler's Nuremberg address and refer to Czechoslovakia. It is to be expected that the same phrases will be applied to Hitler in the propaganda of anti-Nazi factions.

Does this mean that all these statements of the propagandist are a pack of lies? By no means. But they leave much unsaid.

What is never suggested by the war propagandist is that war itself is an injustice, an insanity, a method of self-destruction and world destruction beside which nearly ever other form of cruelty, torture, or indignity is insignificant.

A favorite device of the propagandist is the representation of war as a crusade for right and justice.

In his recent Nuremberg speech, Hitler, consciously or unconsciously applied the laws of propaganda in paving the way, psychologically, for such a "holy war." He dwelled on the "re-birth" of Italy and Germany. Was this to prepare the minds of the German people for a new idea of a modern sort of baptism of fire? He mentioned "sacred duty and responsibility." And he shouted that the Sudeten Germans were "created by God."

With such noble conceptions, do proponents of war justify to themselves and to others a program of mass murder.

Neutrality Is Difficult

The holes in Swiss cheese, it was said back in 1918, were made by the shells of Allies and of Bosche, whizzing over neutral Alps.

Neutrality is always subject to vigorous attack from both sides—propaganda being the "bomb" used to drive holes in such a policy.

In ordinary times of peace and plenty, a middle-of-the-road path sounds like

common sense to nearly all of us. Neither the wild-eyed "Red" nor the "Economic Royalist" is popular with the mass of the people.

But when crisis comes, the conservative majority disappears. We take sides, and we recognize but two sides. At such a time, you are told that you must be for Hitler or for the Reds. You must be for Supreme Court reform or be Anti-New Deal. In Labor ranks you are a follower of Green or of Lewis.

It was the same in 1918. Either you approved entrance of the United States into the World War or you were pro-German. In times of national stress, the middle road, the compromise, the neutral stand may be gradually abandoned. It is hard to keep a cool judicial attitude during a war fever.

Partly this is because the extremes recruit young zealots, youths who would lay down their lives for their ideals. Partly it is because the extremes are picturesque and they manufacture strong propaganda.

This propaganda builds up a picture of the other extreme as a huge and powerful monster. The Bolshevik Menace takes on definite form of a great beast with tentacles like an octopus. Only the power of a totalitarian state can grapple with such a creature, you are told.

In the propaganda of the communist, the iron heel of the dictator is likewise personified. Only by wiping out capitalism can this overlord be robbed of his crushing power.

Radio Takes Part

Perfection of the radio has made it possible to hear the voices of London, Rome, Berlin, Paris and Praha within the space of a single hour.

From Paris I hear the world news as the French view it. I turn my dial. From Berlin comes a voice speaking precise English. He tells of "sadistic" officers of the Czech government and their "torture of Sudetens." These "sadists," I hear, go into a little Sudeten town, first drain the little lakes so as to destroy possibility of fire control and then set fire to the homes. Sudeten men are driven from their homes. Their women and children, left defenseless, are "frightfully mishandled before being thrown into jail."

I have only to turn the needle of my dial a hair's breadth to bring in the voice of an English woman. She describes a trip through the Sudeten area which "was so peaceful that I found it difficult to believe that it was the center of such a crisis."

The voice of Praha itself denounces German propaganda and tells of attacks by men fully armed with tools of war made in Germany.

It is pleasant to turn again to London and find that at least a part of Europe is still interested in Rugby results.

PUBLIC HEALTH

Better Health Seen As Result Of Air-Raid Threats

If City Residents Should Move Out to Country They Would Benefit If Proper Precautions Were Taken

THE threat of air raids of Paris, London and other large European cities may reap a harvest of vastly better health for the people now living in these cities.

The French and British governments, have emergency plans for moving Londoners, Parisians and other city residents out into the country where they may be safer from bombs and poison gas.

Health as well as safety would be served by such a move, Dr. Robert Olesen, assistant surgeon general of the U. S. Public Health Service, believes.

Horrible pictures of the devastating epidemics of smallpox, typhoid fever, cholera and typhus fever that attended mass movements of populations in the past come to mind when the question arises as to the effect on health of present day evacuation of Paris, London and other large cities.

If the residents of these cities are scattered over a considerable area, the evacuation can be done without any danger to health, Dr. Olesen believes. In fact, he added, if there is a long-drawn-out war, the end result of the emptying out of the cities will be better health for all those moved.

Dangers to health, when large masses of people are moved, arise from lack of sanitation and overcrowding. When sanitary facilities are lacking there is danger of typhoid fever, cholera and the dysenteries. With overcrowding there is danger of influenza, meningitis and many other communicable diseases.

Modern health departments, such as the British Ministry of Health and the French Ministry of Hygiene and our own federal health service have the means and the knowledge of providing pure water, milk and food supplies and

The present easing of the European tension does not necessarily bring any moratorium on war propaganda.

There will still be those who seek personal gain by fomenting hatred of man against man while preaching peace and urging a "war to end war."

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sanitary sewage disposal even in emergencies.

When thousands of refugees were hastily assembled in emergency camps during the Ohio-Mississippi floods, Dr. Olesen pointed out, no epidemics occurred. In fact, there were fewer cases of communicable diseases in the affected regions during and after the floods than there are in those regions in normal times.

People evacuated from Paris, London and other cities to escape air raids would probably have to live at first in tents and temporary shacks, as refugees from floods or fire must live. These may be uncomfortable but they need not be unhealthy, Dr. Olesen said.

When the city residents are moved to these emergency camps they will all undoubtedly be vaccinated against smallpox. Many or all may be given anti-typhoid fever inoculations. The children will be given diphtheria-preventing toxoid or toxin-antitoxin. Many persons who have never been vaccinated will get this extra health protection from the move out of the city.

The change from crowded, damp and sometimes insanitary tenements in the cities to the country with its fresh air and more abundant sunshine is an additional health benefit Dr. Olesen sees in the move.

Nurses and physicians, serum for diagnosing and treating pneumonia, and for treating meningitis and tetanus (lock-jaw) will be needed as well as food and shelter if the city people are moved into temporary camps or barracks. These added health safeguards will undoubtedly be provided.

The distress of being uprooted from

their homes and knowing that these are in constant danger of destruction is a distinct danger to mental health, Dr. Olsen pointed out. This can be overcome by providing diversion and occupation.

Many mothers and home makers improved their knowledge of cooking, child-care and home hygiene while they were living in refugee camps during the Ohio-Mississippi flood. This benefit to health was a result of nutrition and similar classes organized by the Red Cross to give occupation to the women in the refugee camps.

Final health benefit seen by Dr. Olsen as following the wartime evacuation of the cities is the possibility of returning city dwellers after the emergency to homes that are much more healthful than those they formerly occupied. This has been accomplished in the flooded areas and can be done in the war-threatened cities. Many homes may be destroyed by bombs, as many were by flood waters. When they are rebuilt, provision can be made for better sanitation and more sunshine and air.

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GEOLOGY

Submarine Volcano Found Off California Coast

A SUBMERGED volcano, in water two miles deep off the coast of California about 150 miles southwest of Catalina, has been discovered by an expedition of the U. S. Coast and Geodetic Survey. Prof. W. F. Shepard of the University of Illinois, at present working at the University of California's Scripps Institution of Oceanography, determined the nature of the submarine mountain, which has two craters. Whether or not it is active has not yet been learned.

Science News Letter, October 8, 1938

ZERO TO EIGHTY

by Dr. E. F. Northrup

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AERONAUTICS

Millions Spent on Aviation Will Show Ghastly Results

European Laboratories Have Invested Far More In Research Than Has America; Return Not in Cash

HEAVY European expenditures for aeronautical research, which far outstrip American budgets devoted to the improvement of military aircraft, will be repaid a thousandfold when war breaks out. But the payment will not be in dollars and cents. It will be made in a coin of a vastly different kind.

Behind the 20,000 military aircraft poised at European airports for the command to take off on destructive military missions are scientists who have created more efficient aerial means of destruction at a frenzied pace dictated by the totalitarian states they either serve or fear they must fight.

Many more millions are known to have been spent by European governments on research in military aeronautics than by the U. S. government, though any estimate of the exact amount would be the wildest sort of guess.

Research plants that dwarf the National Advisory Committee for Aeronautics' laboratories at Langley Field, Va., have been turning out improved planes, better bombs, more efficient armament and war-time aeronautical accessories in a bewildering flood.

Such laboratories include Guidonia, near Rome; the magnificent facilities of the Deutsche Versuchsanstalt fuer Luftfahrt (German Research Institute for Aeronautics) at Adlershof; the Royal Aircraft Establishment at Farnborough in England; the Aerodynamics Department of England's National Physical Laboratory at Teddington and others that have either sprung up or been greatly expanded since the world became acutely conscious of the war menace half a dozen years ago.

Not more than \$3,000,000 is spent each year in the United States for government-supported military aeronautics research, a small sum compared to expenditures in any single major European country. The National Advisory Committee for Aeronautics' 1938 budget totaled but \$1,733,850, while smaller amounts were spent by the U. S. Army Air Corps and the Navy for developing new types of craft.

The difference is shown in the fact

that European research has actually progressed at a faster rate than in this country during the last few years. Once markedly behind America in important developments, European countries have in some cases actually caught up with the United States. One such country is Germany.

Material testing has occupied a prominent place on the research programs of European laboratories, for raw materials are more difficult to get on the Continent and in England. Consequently more attention has been paid abroad to development of substitutes for aluminum alloys that are preferred in the United States almost to the exclusion of other substances.

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Cleaning up a wishing well in a national park reservation, employees recently removed 700 objects—from bobby pins to chewing gum—placed in the well by wishful tourists.



NEW TYPE

This is how the new plastic type is set. At present it cannot be set on the linotype machine.

CHEMISTRY

Plastic Type Challenges Universal Metal Type

German Journal Is Printed From Thermoplastic Material, Composition of Which Is Kept Secret

THE FIRST revolution in type since the introduction of metal type is coming today from Germany.

It consists in the use for the first time of a synthetic plastic material for casting type.

Readers of the journal which is the official organ of the German government agency charged with making Germany self-sufficient in four years were astonished recently to read that four pages of the magazine, in no way distinguishable from the rest, had been printed from a thermoplastic material whose exact composition is still a Nazi secret.

The type, which weighs one-tenth as much as the more usual lead, tin and antimony alloy, has printing characteristics at least as good as its metal prede-

cessor, its developers, Dr. Bekk and Ernst Strunk, declare.

It is durable, as the photomicrographs show. The top pair show (left to right) lead type before and after printing 100,000 copies. The bottom pair show thermoplastic type under similar conditions. As can be seen, the thermoplastic type, which is more resilient than type metal, has kept sharper and cleaner edges, one of the criteria by which the durability of type is measured.

Thus far only handset type has been manufactured, but machine setting meth-

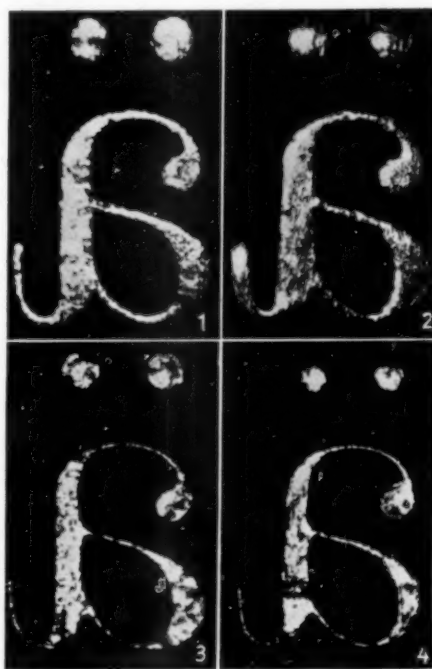
ods are now being developed. The chief difficulty in the way of its use in the linotype machine, ubiquitous accompaniment of every modern printing plant, is the necessity for pressure in casting the new material.

The type can be melted and recast. Although more expensive weight for weight than metal, the larger amount of type that can be made from a given weight of plastic makes its use as economical as that of metal.

Possibility of constructing heavy flat bed presses and even of building high speed rotary presses in lighter form than that practiced today is foreseen by the inventors of the new type. Not so much force will be required to make an impression. Hence one source of the pounding vibrations of a modern press can be made much less important.

It is possible also that stereotypes will some day be made from the new material. The plastic used is said to be similar to the styrene resins used in the United States, but is not the same material.

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EFFECTS OF USE

At the top are photomicrographs of the same letter in lead type before and after printing 100,000 copies. The plastic type below shows the same fine edges after a similar printing job.

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NAVIGATION

Compass, Columbus' Guide Known Long Before His Time

Was Well Known to Writers Who Died Two Centuries
Before the Famous Trip Celebrated This Month.

COLUMBUS used a magnetic compass on his immortal voyage across the unknown Atlantic, and it has been widely assumed that this aid to navigation was a new invention in 1492. That it was an old and familiar device even then is attested by medieval records that have apparently been insufficiently studied in modern times.

References showing that mariners three centuries before Columbus' time used and understood the compass are cited by Prof. Walter J. Seeley, chairman of the department of electrical engineering at Duke University.

Alexander Neckam, who died in 1217, gives in his book *De Natura Rerum* the following unmistakable description of the magnetization and use of the compass needle:

"The sailors, moreover, as they sail over the sea, when in cloudy weather they can no longer profit by the light of the sun, or when the world is wrapped in the darkness of the shades of night, and they are ignorant to what part of the horizon the prow is directed, place the needle over the magnet, which is whirled round in a circle, until, when the motion ceases the point of it (the needle) looks to North."

In another of his works, Neckam described the compass as "a needle mounted on a dart," used by sailors in navigation.

Another twelfth-century writer who described the compass was William the Clerk, a poet-monk. A passage in one

of his poems, freely translated, reads:

"Who would of his course be sure,
When the clouds the sky obscure,
He an iron needle must
In the cork wood firmly thrust.
Lest the iron virtue lack
Rub it with the lodestone black,
In the cup with flowing brim,
Let the cork on water swim.
When at length the tremor ends,
Note the way the needle tends;
Though its place no eye can see—
There the pole star will be."

It is believed that neither Neckam nor William wrote of the compass as a new invention, but that it was something well known even in their time.

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NAVIGATION

Reference to Compass in 13th Century Poem

By NIKOLA TESLA

AMONG the oldest references to the mariner's compass is a passage in a poem by a little known French writer, Guyot de Provins, who wrote early in the thirteenth century. I first came upon this reference many years ago, during a period of omnivorous reading while I was convalescing from a nearly fatal attack of cholera morbus.

Among the many books I received there was a large volume of citations, gems of literature of all nations in a dozen languages, which aroused my special interest. Most of the excerpts from famous works, in verse or prose, collected by the author, impressed me so strongly by their beauty of thought and expression that even now I can recite many of them without a miss.

It was in this volume that I found the reference to the compass mentioned in the introduction. It was credited to Guyot de Provins, a French poet of the twelfth and thirteenth centuries, and, if my memory serves me well, worded as follows:

"Quand la mer est obscure et brune
Qu'on ne voit ni étoile ni lune

Donc font l'aiguille allumer,
Puis n'ont garde de s'égarer
Contre l'étoile va la pointe."

I translate it freely:

"When gloomy darkness hides the sea
And one no star and moon can see
They turn on the needle the light,
Then from the straying they have no
fright
For the needle points to the star."

As a rule, medieval records do not commend themselves for clarity; in fact, not a few are of very small value to the searcher. It is therefore remarkable that this ancient reference to the compass should be so strikingly clear and explicit.

After reading Guyot's verses one is impelled by the wish to know something more about him. With this intention I tried to obtain information from the New York Public Library but his name was not mentioned in any of the catalogues. I then made a thorough examination of the General Index, which was equally unsuccessful, but found a brief notice in the *Grande Encyclopédie Française*.

This item being of unusual interest I have made an English translation:

Guyot de Provins, French poet, towards 1200. Undoubtedly, after being a minstrel and going perhaps to Jerusalem, he became a Benedictine in Clairvaux and later in Cluny. He composed between 1203 and 1208, in a style lively and original, but harsh and hard, a satirical work consisting of 2691 octosyllabic verses, which he entitled "Bible," probably to indicate that he intended to say only what is true, and in which he passed in review almost the whole contemporary society. Especially noteworthy is his criticism of the Pope, expressed with great independence, and that of the high clergy and physicians, and a number of passages in which he argues that the compass was known in his time.

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**German Youth Can't March;
They Have Flat Feet**

GERMAN youth have flat feet and can't march long distances. This is admitted in German reports given currency by the British medical journal, *Lancet* (Sept. 17).

Some 70% of the Hitler Jugend recruits "show evidence of foot strain and are in process of developing deformities of the foot."

Splay feet, beginning flat foot and fallen arches are said to be common.

"The disabilities due to these imperfect feet are considerable," it is stated, "and the young people find it impossible to stand up to the long marches and other training expected of them."

Germans express concern over the state of affairs and "at the loss sustained in military and working efficiency."

Science News Letter, October 8, 1938

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, AND OF MARCH 3, 1933

Of SCIENCE NEWS LETTER published weekly at Washington, D. C., for Oct. 1, 1938.
Washington
District of Columbia

ss.

Before me, a Notary Public, in and for the District of Columbia aforesaid, personally appeared Watson Davis, who, having been duly sworn according to law, deposes and says that he is the Editor of the SCIENCE NEWS LETTER and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, as amended by the Act of March 3, 1933, embodied in section 537, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Editor, Watson Davis, 2101 Constitution Ave., Washington, D. C.

2. That the owner is:

Science Service, Inc., 2101 Constitution Ave., Washington, D. C., a non-profit corporation without stock, operating as the Institution for the Popularization of Science.

3. That the known bondholders, mortgagees, and other security holders owning or holding mortgages, or other securities are: None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also in cases where stockholders or security holders appear upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Watson Davis,
Editor

Sworn to and subscribed before me this 26th day of September, 1938.

[SEAL]

Charles L. Wade
(My commission expires March 14, 1943)

SCIENCE SUBJECTS FOR GENERAL READING**Big Fleas Have Little Fleas**

or Who's Who
Among the Protozoa

By Robert Hegner

A professor of the Johns Hopkins University descends from his professorial podium to present a story of research and travel in humorous but instructive chapters, in poems portraits and cartoons.

Fleas are pestiferous parasites and no respecters of persons. What the fleas are to homo sapiens, protozoa are to the fleas.

Visit the little and lesser fleas in their native haunts, among the muscle fibres, in the blood stream, in the midst of champing teeth. Know how the "first animals" came out of the everywhere into the here. Watch the little millions as they march in review before your microscopic eye. Delve into the mysterious and often ignoble partnerships that nature imposes on the beasts and fowls.

However of the 15,000 species of protozoan parasites as many as 25 may dwell in human beings. What you eat, where you live and travel determines the character of the hidden and unwelcome guests.

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•First Glances at New Books

Photography

MODERN PHOTOGRAPHY 1938-9—C. Geoffrey Holme, ed.—*Studio*, 112 p., illus., \$3.50 cloth, \$2.50 paper. Good reproductions of a beautiful collection of photographs, some of which are in color. The text is limited to one article on the modern camera, a tabular description of cameras, and a brief note accompanying each photograph.

Science News Letter, October 8, 1938

Medicine

INSULIN: ITS PRODUCTION, PURIFICATION AND PHYSIOLOGICAL ACTION—Douglas W. Hill and Frederick O. Howitt—*Chem. Pub. Co. of N. Y.*, 219 p., illus., tables, \$5. This is a summary of all the scientific literature on insulin up to date, except for clinical applications. The book is for physicians, chemists and physiologists.

Science News Letter, October 8, 1938

Economics

INSURANCE AND ANNUITIES FROM THE BUYER'S POINT OF VIEW—E. C. Harwood and Bion H. Francis—*Amer. Institute for Econ. Research*, 171 p., \$2.50. Information for the average man who buys life insurance and annuities. Comparisons of the costs, the policies, and various companies are given.

Science News Letter, October 8, 1938

Physiology

THE CHEMISTRY OF THE INDIVIDUAL—J. B. S. Haldane—*Oxford Univ. Press.*, 17 p., 40 c. The 38th Robert Boyle Lecture, delivered before the Oxford University Junior Scientific Club on June 12, 1936.

Science News Letter, October 8, 1938

General Science

PROCEDURES OF EMPIRICAL SCIENCE—Victor F. Lenzen—*Univ. of Chicago Press*, 58 p., \$1. "The acquisition and systematization of knowledge concerning the things and phenomena experienced in observation" is the problem of empirical science. Out of it comes the possibility of the eventual unity of all empirical science, one step toward which would be the unity of quantum mechanics and the relativity theory.

Science News Letter, October 8, 1938

Aeronautics

HIGH, WIDE AND FRIGHTENED—Louise Thaden—*Stackpole*, 263 p., illus., \$2. The autobiography of a notable woman flier who admits she is no super-heroine and that she has on occasion been fright-

ened while in the air. So have most other pilots, she says, and those who deny it aren't telling the truth. Her career is interesting because she is one of those few outstanding women pilots who have demonstrated that men have no monopoly in the air.

Science News Letter, October 8, 1938

Physics

THE NATIONAL PHYSICAL LABORATORY: REPORT FOR THE YEAR 1937—H. M. Stationery Office; Obtainable from *British Library of Information, New York*, 150 p., 80 c. The NPL is the British analog to the U. S. Bureau of Standards and this is the annual record of its researches in many fields.

Science News Letter, October 8, 1938

Biology

METHODS AND MATERIALS FOR TEACHING BIOLOGICAL SCIENCES: A TEXT AND SOURCE BOOK FOR TEACHERS IN TRAINING AND IN SERVICE—David F. Miller and Glenn W. Blaydes—*McGraw-Hill*, 435 p., illus., \$3.50. Those who are still students and expect to become teachers will gain useful training from this book. Those who are already teaching will find in it ideas that may help them obtain better results from their work.

Science News Letter, October 8, 1938

Surgery—Autobiography

THE HEALING KNIFE—George Sava—*Harcourt*, 310 p., \$2.50. The butchery and loss of life seen during the World War led the author, then a 17-year-old boy in the White Russian Army, to dedicate himself to the task of saving lives. This book is an exciting story of his adventures and struggles toward his goal of becoming a surgeon.

Science News Letter, October 8, 1938

Biology

A MANUAL FOR THE BIOLOGY LABORATORY—Perry D. Strausbaugh and Bernad R. Weimer—*Wiley*, 183 p., \$1.75.

Science News Letter, October 8, 1938

Chemistry

THE CHEMISTS' YEAR BOOK, 1938—F. W. Atack—*Chem. Pub. Co. of N. Y.*, 1257 p., \$6. This book, published in England, contains a sizable amount of the information occurring in the more familiar Chemical Handbook. However, it also contains summaries of chemical procedure, which provide specific information of interest to chemists.

Science News Letter, October 8, 1938

Zoology

ZACA VENTURE—William Beebe—*Harcourt, Brace*, 308 p., illus., \$3. Reading a new Beebe book is like going fishing with Beebe: you can't tell what's going to turn up next, but you know it will be interesting. This one starts with a pickled snipefish in a vial and comes to a climax with a 42-foot whale shark in the Gulf of California.

Science News Letter, October 8, 1938

Aeronautics

THROUGH THE OVERCAST, THE ART OF INSTRUMENT FLYING—Assen Jordanoff—*Funk & Wagnalls*, 356 p., illus., \$3. A companion volume to "Your Wings," written by Jordanoff a few years ago. "Your Wings" told the fledgling the basic facts about flying. Now Jordanoff gives in his very readable manner the same type of information about blind flying. The book is well illustrated.

Science News Letter, October 8, 1938

Engineering

MAKING AND OPERATING MODEL RAILROADS—Raymond F. Yates—*Appleton-Century*, 315 p., \$3. A practical volume on a hobby whose popularity has not ceased to grow during the past years. It tells how track should be laid out, scenic effects created, locomotives and rolling stock made—in short, how to put your railroad together and how to operate it.

Science News Letter, October 8, 1938

Biology

ADVENTURES WITH LIVING THINGS, A GENERAL BIOLOGY—Elsbeth Kroeber and Walter H. Wolff—*Heath*, 798 p., illus., \$1.96. A high school text with more "pep" than older books usually developed. Stimulating questions are included in the captions of most of the illustrations, and the heads of sections are frequently in the form of questions.

Science News Letter, October 8, 1938

Zoology

EVOLUTION OF THE ANNELIDA, ONYCHOPHORA, AND ARTHROPODA—R. E. Snodgrass—*Smithsonian Institution*, 159 p., illus., 60 c. By careful anatomical comparisons, the author traces the possible derivation of all animals with segmented bodies from a common ancestry of generalized annelids. Too technical for the general reader, this monograph will be the more eagerly seized upon by professional zoologists.

Science News Letter, October 8, 1938